

CLAIMS

I claim:

1. A rail for use as a support in an apparatus for holding a plurality of semiconductor wafers, the rail comprising:

a plurality of teeth, each of the teeth having a top surface, a bottom surface, and a length, the teeth being arranged such that a space between the top surface of one tooth and the bottom surface of a next higher adjacent tooth forms a slot for receiving a portion of a semiconductor wafer;

a raised support structure for contacting and supporting said wafer and located on the top surface of substantially all teeth that form a bottom of a slot, the raised support structure having opposing sidewalls that intersect with and define an upper surface therebetween, the upper surface being spaced from the top surface, each raised support structure extending for at least approximately 50% of the length of the corresponding tooth; and wherein

on each raised support structure, a radius is formed at each intersection of at least selected sidewalls and the upper surface.

2. The rail of claim 1, wherein on each raised support structure, a radius is formed at each intersection of each of the sidewalls and the upper surface.

3. The rail of claim 1, wherein the length of each tooth is greater than 25 millimeters.

4. The rail of claim 1, wherein the length of each tooth is between about 30 and about 100 millimeters.

5. The rail of claim 1, wherein the radius is at least 1 millimeter.

6. The rail of claim 1, wherein the radius is at least 1 millimeter and not greater than 2.5 millimeter.
7. The rail of claim 1, wherein the raised support structure extends at least approximately 70% of the length of each tooth.
8. The rail of claim 1, wherein each raised support structure is a wedge-shaped protuberance running along one side of one of the teeth.
9. The rail of claim 1, wherein each raised support structure runs continuously from the front tip of one of the teeth to a point located on the tooth at least 80% of the length of the tooth from the tip of the tooth.
10. The rail of claim 1, wherein the rail is composed of silicon carbide.
11. The rail of claim 1, wherein the rail is formed as a monolithic structure.

12. A wafer carrier for supporting a plurality of semiconductor wafers, the carrier comprising:

at least one generally planar plate;

at least two support rails, each support rail having a vertical axis, each support rail being mounted with its vertical being generally normal to the plate; and wherein

each support rail has a plurality of teeth arranged in a vertical stack, the teeth extending parallel to each other and generally parallel to a plane of the plate, each tooth having raised support structure thereon, the support structure comprising an upper surface spaced above a top surface of the tooth and sidewalls connecting the upper surface to the top surface, a radius being formed at an intersection of at least selected sidewalls and the upper surface.

13. The wafer carrier of claim 12, wherein a radius is formed at each intersection of each of the sidewalls and the upper surface.

14. The wafer carrier of claim 12, wherein the length of each tooth is greater than 25 millimeters.

15. The wafer carrier of claim 12, wherein the length of each tooth is between about 30 and about 100 millimeters.

16. The wafer carrier of claim 12, wherein the radius is at least 1 millimeter.

17. The wafer carrier of claim 12, wherein the radius is at least 1 millimeter and not greater than 2.5 millimeter.

18. The wafer carrier of claim 12, wherein each support structure extends at least approximately 70% of the length of each tooth.
19. The wafer carrier of claim 12, wherein each support structure is a wedge-shaped protuberance running along one side of one of the teeth.
20. The wafer carrier of claim 12, wherein each support structure runs continuously from the front tip of one of the teeth to a point located on the tooth at least 80% of the length of the tooth from the tip of the tooth.
21. The wafer carrier of claim 12, wherein each support rail is composed of silicon carbide.
22. The wafer carrier of claim 12, wherein each support rail is formed as a monolithic structure.